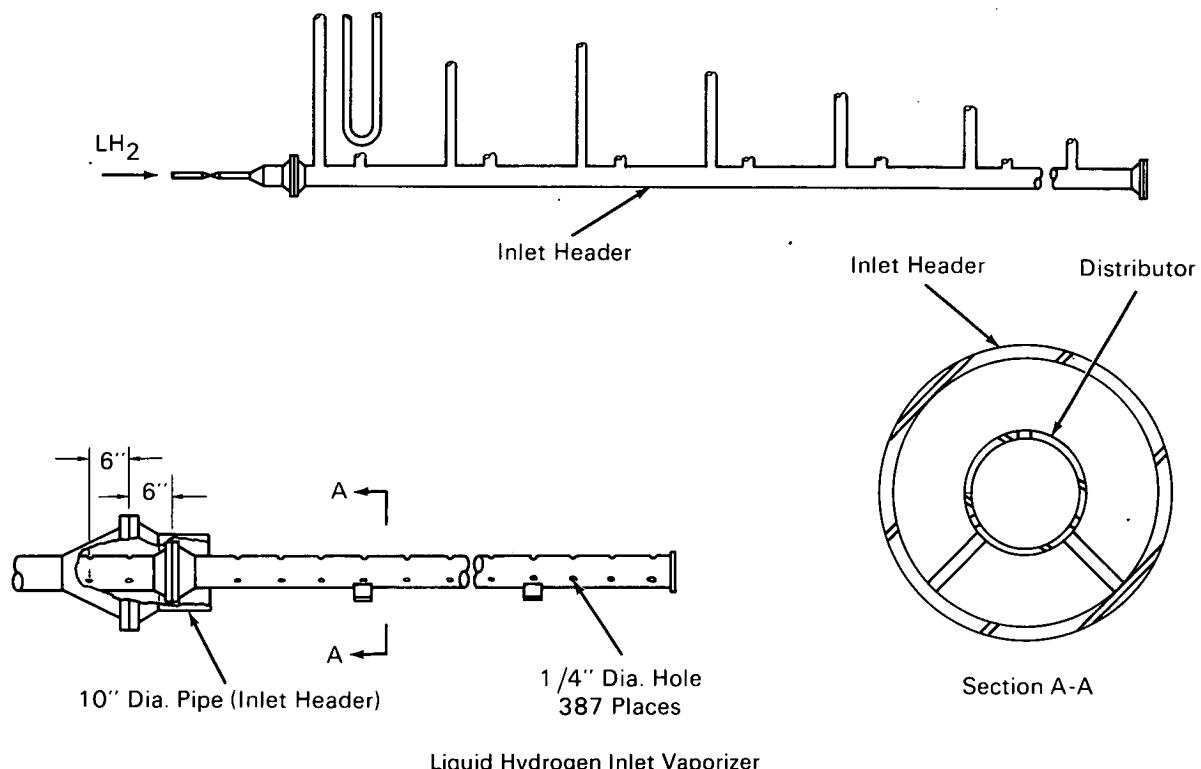


NASA TECH BRIEF



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Modified Cryogenic Storage Tank Subsystem



The problem:

During site activation of Launch Complex 39, an anomaly was discovered in the inlet header of the liquid hydrogen vaporizers. Investigation revealed that the super cold liquid (LH_2) caused excessive bowing of the vaporizers due to uneven distribution of temperature to the vaporizer coils. The inlet header was designed with a diversion plate to facilitate fill and distribute flow to the vaporizer coils. The plate did not work as expected; consequently, the LH_2 did not

completely fill the inlet header causing the lower half to be approximately $-300^{\circ}F$ and the upper half to be near ambient temperature.

The solution:

To correct this condition the diversion plate was removed and an internal spray distribution header was put in the system. The header was connected to the LH_2 supply, thereby providing equalized cooling around the circumference of the inlet header.

(continued overleaf)

Notes:

1. These modifications have resulted in significantly reduced storage tank venting time to aid in vehicle drain operations. Also, the possibility of damaging shock waves or pressure pulsations during storage tank venting operations was eliminated.
2. This information should be of interest to industrial firms which store and transport cryogenic liquids, and also to engineers engaged in venting operations.
3. No further documentation is available. Inquiries may be directed to:

Technology Utilization Officer
Kennedy Space Center
Kennedy Space Center, Florida 32899
Reference: B69-10556

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: Robert H. Roberts and William J. Burns of
The Boeing Company
under contract to
Kennedy Space Center
(KSC-10380)